configurations advocated by Telocator; an initial full-cellular requirement inflates system costs unnecessarily.

Telocator also opposes the suggestion by NTIA that two systems be authorized in "high density" markets, but that there be "unlimited entry" in all other markets. First of all, there is no rational way to determine a *priori* which markets will be high density. Secondly, NTIA stands rational economic principles on their head and violates the fundamental principles of equity mandated by the Act by permitting unlimited competition in the marginal markets but limiting competition where it would do the most good. Third, the way in which the number of carriers in the unlimited entry markets will be reduced through market forces is never explained; in fact, NTIA notes elsewhere in its comments that unlimited entry could artificially inflate the cost of cellular service and create technical planning problems. Fourth, the unlimited entry proposal would create horrendous technical and engineering problems; efficient frequency usage would be curtailed, and the absence of sufficiently large blocks of spectrum exclusively assigned to each carrier would result in chaos.

Regarding spectrum allocation, Telocator says that if the Commission does not formally reallocate the adjacent 20 MHz reserve bands to cellular, it should at least reposition the cellular bands in order to equalize the size of the reserve bands, as AT&T urges. Motorola's position—that the allocation should be reduced to 19 or 20 MHz—is the latest in a long and tedious string of attempts by Motorola to maintain its neatly compartmentalized view of the land mobile community and to eliminate any common carrier threat to Motorola's power over the land mobile field. Motorola's transparent motive in arguing for a smaller cellular allocation is to reduce the capacity of cellular systems so they can only serve the mobile telephone user and so they will not be able to make inroads into the private dispatch market. If cellular systems can serve part of the private dispatch market, the need for private systems will be reduced. It would be unfortunate to require cellular systems to operate in a full-cellular mode from the beginning, thereby making cellular subscribers pay a premium in the name of spectrum efficiency, in order to devote the overwhelming bulk of the land mobile allocation to private dispatch systems operating at much lower levels of spectral efficiency.

Regarding the funding of AT&T's cellular development, Telocator notes that AT&T confessed in its comments that it subsidized the development from monopoly revenues. Thus, the fact of cross-subsidy is not in dispute; only the remedy for AT&T's misconduct remains to be resolved. AT&T has argued that licensing of its technology for a fee should not be required, that the Western Electric consent decree is sufficient for this purpose. Telocator disagrees. No equipment for cellular systems (other than the switch) is or may be produced by Western Electric, so AT&T would be under no compulsion from the consent decree. Even if the Commission permitted Western Electric to manufacture equipment there is no guarantee it would. The switch, which is covered by the decree, is worthless without the specialized programming developed for cellular operation, which may not be covered by the decree. Telocator believes that foreign manufacturers should be excluded from any no-fee licensing provisions.

In addressing technical matters, Telocator argues that mobile units should have all-channel capability. Since Telocator believes the reserve bands should be repositioned inside the cellular bands, this would mean that 60 MHz mobiles should be required. While development of such units may take some time, it does not appear to be an overly difficult or time-consuming process. In addition, the cost penalties involved in producing 60 MHz units are minimal—only 10 percent initially, with later price reductions due to mass production.

Telocator disagrees with Motorola about the need for system compatibility with portables. While portables will likely be a major market segment, a requirement that cellular systems be able to serve portables would increase costs due to the need for additional transmitter and receiver sites. Portable service will probably not be demanded

throughout a given system, but will be used primarily in limited "pockets". Regulatory intervention at this time regarding portables would be premature.

Telocator is shocked and dismayed that AT&T proposes cellular system interconnection to the landline telephone network at "one or more local serving wire centers", or Class 5 offices. This anticompetitive ploy by AT&T must be rejected. At the time AT&T had assurance of a lock on cellular franchises it proposed to connect the cellular switch as a Class 5 office to a Class 4 office. This was the best engineering approach. Now that competitive considerations are a factor, AT&T has changed its position and proposes to connect entire cellular systems to the network on the same basis as an ordinary subscriber telephone. This will burden consumers with additional costs and impediments in the operation of their service. It requires the equivalent of two servicing central offices in parallel, performing the same functions twice; it also burdens the cellular operator with an inferior signaling system for network access. One-half to one-third the exchange plant costs would be saved by providing connection to a Class 4 office. AT&T's proposed connection practice also serves as a vehicle for perpetuating the telephone companies' discriminatory practices in handling RCC-originated or terminated toll calls, as explained in the Jubon comments. Accordingly, the Commission should establish the obligation of all telephone companies to extend and connect their facilities to the facilities of a cellular system licensee on a basis no less favorable than is afforded to any Class 5 landline office.

Telocator concludes, by replying to NTIA's expression of support for separate wireline and non-wireline cellular frequency allocations. NTIA's argument that a split allocation has been proven over time does not go far enough; separate treatment has been proven to be inherently unequal. While there may have been sound reasons for unequal treatment in 1948 there are none in this proceeding. A separate allocation policy for cellular systems would not serve to foster the growth of systems competing with the wireline carriers (the Commission's expressed purpose in 1948), but would rather serve to insulate the wireline carriers from competing applications. To give wireline carriers preferential status would be the reverse of a rational regulatory policy.

UTC

In its reply comments UTC addresses contentions that 20 MHz of reserve frequencies should be allocated for cellular systems. AT&T has proved this in order to permit the implementation of two competing 30 MHz cellular systems per market. UTC notes that the cost of a single mature 40 MHz system would be less than the cost of implementing two 20 MHz or 30 MHz systems. Furthermore, there are no assurances that two systems will be set up in many markets; this could result in a gross underutilization of spectrum. UTC also argues that the demand for cellular service needed to justify the allocation of reserve spectrum has not been established. Reserve spectrum should not be dedicated for cellular service based on the preliminary estimates of demand available now, especially in view of the demonstratable need for all of the 800 MHz reserve spectrum by the Private Land Mobile Services. A final point is that the cellular service seems to be oriented toward business-type mobile telephone communications. The dedication of scarce spectrum for a relatively low priority communications requirement is unwise, in light of the requirements of higher priority private systems, such as those operated by the energy utilities.

Appendix C

Title 47, Part 22 of the *Code of Federal Regulations* is amended as follows:

1. By revising the Table of Contents to read as follows:

• • • • • • •

§22.9 Standard application forms for Domestic Public Land Mobile Radio, Rural

Radio, Domestic Public Cellular Radio Telecommunications and Offshore Telecommunication Services.

• • •

Subpart K–Domestic Public Cellular Radio Telecommunications Service

22.900 Scope.
22.901 Eligibility.
22.902 Frequencies.
22.903 Cellular system service areas.
22.904 power limitations.
22.905 Antenna height-power for base stations.
22.906 Types of emissions and modulation requirements.
22.907 Emission requirements.
22.908 Transmitter construction and installation.
22.909 Control point.
22.910 Station identification.
22.911 Permissible communications.
22.912 Responsibility for operational control and maintenance of mobile stations.
22.913 Content of applications.
22.914 Provision of service to subscribers.
22.915 Cellular system capability specification.
22.916 Evaluation of cellular applications.
22.917 Demonstration of financial qualifications.

• • • • • • •

2. By revising Section 22.2 to add the following definitions in alphabetical order:

Cell - The area reliably served by a transmitter location in a cellular system.

Cellular System - A high capacity land mobile system in which assigned spectrum is divided into discrete channels which are assigned in groups to geographic cells covering a cellular geographic service area. The discrete channels are capable of being reused in different cells within the service area.

Cellular Geographic Service Area - The geographic area served by a cellular system within which the licensee is required to provide reliable service.

Control Channel - The channel used for transmission of digital control information from the base station to the mobile station or from the mobile station to the base station.

Roamer - A mobile station which communicates with a land station other than one with which it is normally associated.

3. In Section 22.9, the heading is revised to read as follows:

§22.9 Standard application forms for Domestic Public Land Mobile Radio, Rural Radio, Domestic Public Cellular Radio Telecommunications and Offshore Telecommunications Services.

• • • • • • •

4. Section 22.15 is revised to read as follows:

§22.15 Technical content of applications.

• • • • • • •

(c) Each application involving a new or modified antenna supporting structure or passive facility, the addition or removal of an antenna, or the repositioning of an authorized antenna for a station or receive-only facility must be accompanied by a

vertical profile sketch of the total structure depicting its structural nature and clearly indicating the ground elevation (above mean sea level) at the structure site, the overall height of the structure above ground (including obstruction lights when required, lighting rods, etc.) and if mounted on a building, its overall height above the building. All antennas on the structure must be clearly identified and their heights above-ground (measured to the center of radiation) clearly indicated. In addition, the height to the upper tip of the antenna shall be indicated for those operating in the Domestic Public Land Mobile Radio Service, Rural Radio Service, and the Domestic Public Cellular Radio Telecommunications Service.

• • •

[m] In the Domestic Public Cellular Radio Telecommunications Service each application shall contain the information described in Section 22.913.

5. In Section 22.23, paragraph (c) is revised to read as follows:

§22.23 Amendment of applications.

• • • • • • •

[c] • • •

[1] If in the Domestic Public Cellular Radio Telecommunications Service, the amendment results in any change in the Cellular Geographic Service Area.

• • • • • • •

b. In Section 22.31, paragraph (a) is revised to read as follows:

§22.31 Mutually exclusive applications.

[a] • • •

[1] In the Domestic Public Cellular Radio Telecommunications Service, applications shall be considered mutually exclusive if their Cellular Geographic Service Areas overlap in such a way that a grant of one would preclude the grant of one or more of the other applications.

• • • • • • •

7. In Section 22.32, paragraph (e) is revised to read as follows:

§22.32 Consideration of applications.

• • • • • • •

[e] • • •

[5] In the Domestic Public Cellular Radio Telecommunications Service the application is entitled to comparative consideration (under Section 22.31) with another application (or applications); in such cases the hearing shall conform to the comparative evaluation procedure described in Section 22.916.

• • • • • • •

8. Section 22.43 is revised to read as follows:

§22.43 Period of construction.

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[c] Base stations, which will provide coverage over 75% of the cellular geographic area, as defined in Section 22.905 of these rules, shall be completed and the station ready for operation within 36 months from the original date of the construction permit.

9. In Section 22.101, paragraph (a), is revised to read as follows:

§22.101 Frequency tolerance.

(a) The carrier frequency of each transmitter authorized in these services shall be maintained within the following percentage of the reference frequency except as otherwise provided in paragraph (b) of this section (unless otherwise specified in the instrument of station authorization the reference frequency shall be deemed to be the assigned frequency):

Frequency Range Mhz.	Frequency tolerance (Percent)		
	All fixed and base stations	Mobile Stations over 3 watts	Mobile Stations under 3 watts[1]
25 to 50	0.002	0.002	0.005
50 to 450	.0005	.0005	.005
450 to 512	.00025	.00025	.0005
512 to 821	.0005	.0005	.005
821 to 896[3]	.00015	.00025	.00025
896 to 1000[3]	.0005	.0005	.005
2110 to 2220	.001	. . .	. . .
2200 to 12200[2]	.005	.005	.005
112200 to 40000	.03	.03	.03

10. In Section 22.107, paragraph (b), is revised to read as follows:

§22.107 Transmitter power.

• • • • • • •

[b] The rated power of a transmitter employed in these radio services shall not exceed the values shown in the following tabulation:

Frequency Range (MHz);	Rated power output (watts)
Below 30	50
30 to 50	350
50 to 76	50
76 to 512	[1] 250
512 to 821	20
821 to 851	10
866 to 896	[2] 250
896 to 10000	[2] 20
Above 10000-	[2] 10

• • • • • • •

[Footnote on next page]

[1] Below 512 MHz transmitter plate power input to the final frequency stage, as specified in the Commission's Radio Equipment List. Above 512 MHz transmitter power output, as specified in the Commission's Radio Equipment List.

[2] Beginning Aug. 9, 1975, this tolerance will govern the marketing of equipment pursuant to §§2.803 and 2.805 of this chapter and the issuance of all authorizations for new radio equipment. Until that date new equipment may be authorized with a frequency tolerance of .03 percent in the frequency range 2,200 to 10,500 MHz and .05 percent in the range 10,500 MHz to 12,000 MHz, and equipment so authorized may continue to be used for its life provided that it does not cause interference to the operation of any other licensee.

[3] Equipment authorized to be operated on frequencies between 890 and 940 MHz as of Oct. 15, 1956, shall be required to maintain a frequency tolerance within 0.04 percent subject to the condition that no harmful interference is caused to any other radio station.

11. In Section 22.110, paragraph (a) is revised to read as follows:

§22.110 Antenna polarization.

[a] Stations operating in the 72–76 MHz band, each base, mobile dispatch and auxiliary test station operating in the Domestic Public Land Mobile Radio Service and in the Domestic Public Cellular Radio Telecommunication Service and all classes of stations in the Offshore Radio Telecommunications Service shall employ an antenna which radiates a signal, the electrical component of which is vertically polarized.

12. Section 22.118, paragraph (c) is revised to read as follows:

§22.118 Transmitter construction and installation.

• • • • • • •

(c) Each transmitter, other than a hand-carried or pack-carried transmitter, employed in these services shall be equipped with an appropriately labled pilot lamp or meter which will provide continuous visual indication at the transmitter when its control circuits have been placed in a condition to activate the transmitter. In addition, facilities shall be provided at each transmitter to permit the transmitter to be turned on and off independently of any remote control circuits associated therewith. This paragraph shall not be applicable in the Domestic Public Cellular Radio Telecommunication Service.

• • • • • • •

13. Section 22.120 is revised to read as follows:

Section 22.120 Type acceptance of transmitters.

• • • • • • •

(b) In addition to the normal type acceptance procedures contained in Part 2 of this Chapter and to the technical standards contained in this Part, transmitters designed for operation under Subpart K of this Part shall comply with requirements contained in the Commission's cellular system compatibility specification. (See Section 22.915.)

14. Section 22.208, paragraph (g) is revised to read as follows:

§22.208 Station records.

• • • • • • •

[g] • • •

[1] • • •

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[1] Transmitter rated power output is limited to a maximum of 25 watts on frequencies in the bands 454.6625–455.000 MHz and 459.6625–460.000 MHz.

[2] In the bands 5.925–6.425 MHz and 27.500–29.500 MHz the maximum effective isotropically radiated power of the transmitter and associated antenna of a station in the fixed service shall not exceed -55 dBW. This limitation is necessary to minimize the probability of harmful interference to reception in this band by space stations in the fixed-satellite service. In the band 2.150–2.162 MHz up to 100 watts may be authorized pursuant to §21.904.

channel pairs are: 834.390 MHz through 834.990 MHz and 879.390 MHz through 879.990 MHz.

(2) For systems operating on the frequencies specified for Cellular System B, the 21 channel pairs are: 835.020 MHz through 835.260 MHz and 880.020 MHz through 880.620 MHz.

(d) All applicants for regular authorization in the Domestic Public Cellular Radio Telecommunications Service, before filing an application or major amendment to a pending application, or when permissive changes (i.e., changes in frequency assignment not requiring prior Commission approval) are made within an authorized Cellular Geographic Service Area, shall coordinate proposed frequency usage with existing users in Cellular Geographic Areas within 75 miles of all base stations affected, and with other applicants with previously filed applications whose facilities could affect or be affected by the new proposal in terms of intersystem frequency interference or restricted ultimate system capacity. In engineering a system or modification thereto, the applicant shall be appropriate studies and analyses select sites, transmitters, antennas, and frequencies that will avoid intersystem interference. All applicants, permittees, and licensees shall cooperate fully and make reasonable efforts to resolve technical problems and conflicts that may inhibit the most effective and efficient use of the radio spectrum; however, the party being coordinated with is not obligated to suggest changes or reengineer a proposal in cases involving conflicts. Applicants shall make every reasonable effort to avoid blocking the growth of other systems that are likely to need additional capacity in the foreseeable future. The applicant shall identify in the application all entities with which the technical proposal was coordinated. In the event that technical problems are not resolved or if the existing licensee, permittee, or applicant does not respond to coordination efforts within 60 days after notification, an explanation shall be submitted with the application. Where technical problems are resolved by an agreement or operating arrangement between the parties that would require special procedures to be taken to reduce the likelihood of intersystem interference or would result in a reduction of quality or capacity of either system, the details thereof shall be contained in the application. Upon making a permissive change a licensee shall notify the Commission of its frequency usage and report and coordination.

(e) All mobile units must initially be capable of communicating on the 666 channels specified in paragraphs (b)(1) and (2) of this rule section.

§22.903 Cellular System Service Areas.

(a) The Cellular Geographic Service Area of a cellular system shall be defined by the applicant as the area intended to be served. The CGSA must be drawn on one or more U.S. Geological survey 7½ minute map(s). Within the CGSA the applicant must depict each base station site and its respective 39 dbu contour as determined by the methods described in paragraph (c) below. An applicant must demonstrate that the 39 dbu contours of all base stations will initially cover at least 75% of the total CGSA.

(b) The service area boundary described in paragraph (a) of this section shall be regarded as determining the limits of the cellular system service area for the purposes of providing protection to such systems, and of defining the area within which we will recognize adverse effects for determining standing.

(c) For the purpose of establishing the reliable service area of a station and performing interference studies, an applicant must use procedures consistent with Section 22.504 and F.C.C. Report No. R-6406, "Technical Factors Affecting The Assignment of Facilities In the Domestic Public Land Mobile Radio Service," by Roger B. Carey. Standards and procedures presently applied to

stations in the 450–460 MHz band should be used. Any other interference studies utilizing other procedures, which the applicant believes the Commission should consider, in addition to the above required study, may also be submitted and will be considered in accordance with Public Notice, May 2, 1980, Mimeo 30893, 45 FR 30202 (47 RR 2d 666 (1980)). All supporting data and calculations must be included with the results of the studies.

(d) An applicant whose proposal would extend any 39 dbu contour outside its presently authorized CGSA will be deemed to be applying for a change in its CGSA.

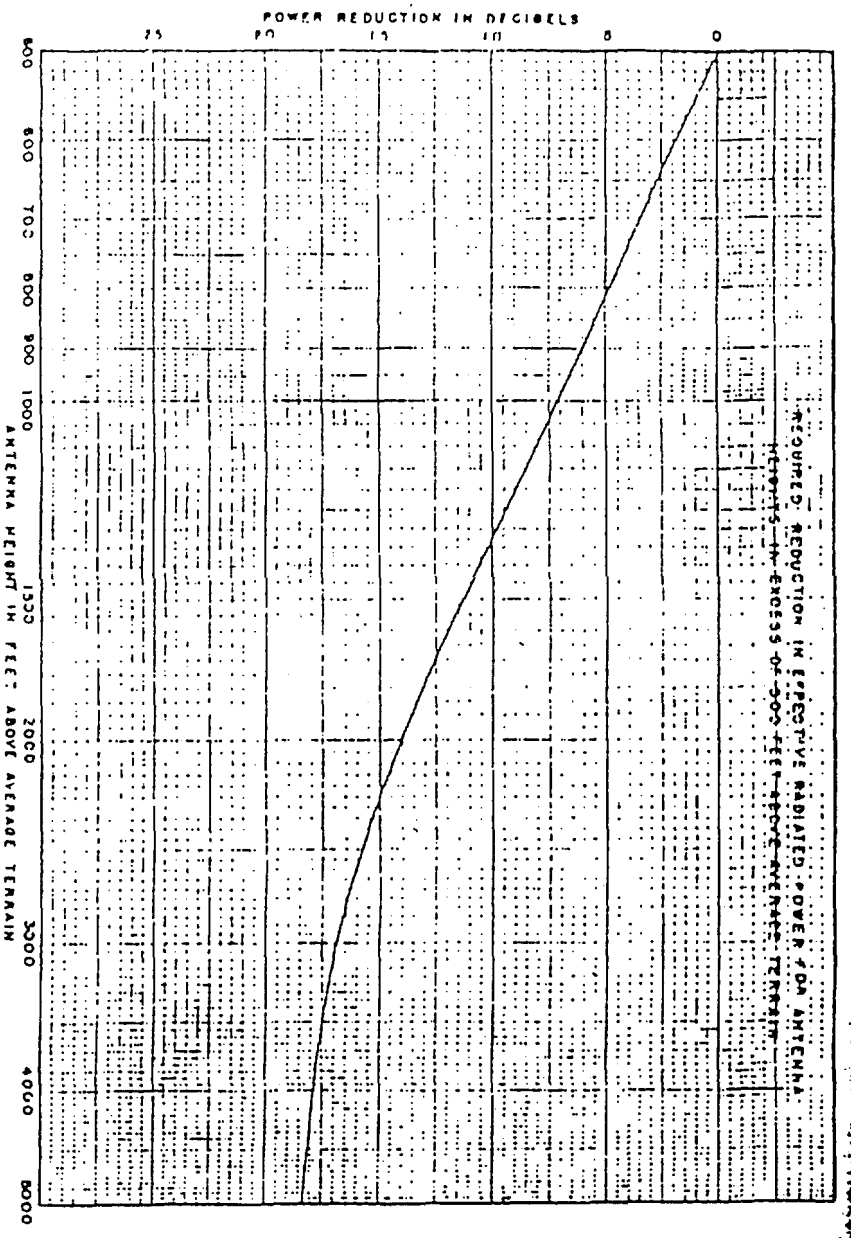
§22.904 Power Limitations.

Stations in this service shall not be permitted to exceed the effective radiated power indicated below.

Base Stations	100 watts (ERP)
Mobile Stations	7 watts (ERP)
Auxiliary Test Stations	7 watts (ERP)

§22.905 Antenna Height-Power for Base Stations.

In view of the fact that the predominant characteristic of cellular systems is frequency reuse within a given service area, the effective radiated power of base stations with transmitting antennas in excess of 500 feet above average terrain (AAT) must be reduced below 100 watts by not less than the amount shown in the chart below.



§22.906

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§22.906 Types of Emissions and Modulation Requirements.

(a) Stations in this service shall normally be authorized to use only type F3 emissions for voice transmissions (radiotelephony).

(1) F3 emissions shall be used only on the non-control frequencies designated in Section 22.903 of this part.

(2) The instantaneous frequency deviation shall be limited to ±12 kHz.

(3) The maximum audio frequency required for satisfactory radiotelephone intelligibility in this service is considered to be 3 kHz.

(4) Preceding the deviation limiter required under paragraph (d) of this section, a compressor circuit followed by a preemphasis stage shall be required for F3 radiotelephony signal processing. These two circuits shall have the characteristics specified in the cellular system compatibility specifications. (See Section 22.915).

(5) Authorization also permits the use of other frequency modulated emissions, such as data transmissions, provided those emissions conform to the technical requirements applicable for F3 operation, including those requirements contained in the Commission's cellular system compatibility specifications (see Section 22.915). The power density of these emissions shall not exceed the power density normally encountered under F3 operation.

(b) For the purpose of selective signaling and control, stations in this service shall normally be authorized to use F9 emissions, as detailed in the Compatibility Specifications. (See Section 22.915).

(1) The instantaneous frequency deviation due to the supervisory audio tones shall be limited to ± 2 kHz.

(2) The instantaneous frequency deviation due to the signaling tone shall be limited to ± 8 kHz.

(c) For the purposes of wideband data transmissions, as detailed in Section 22.915, stations in this service shall normally be authorized to use type F9Y emissions. This data input shall not cause the carrier to exceed an instantaneous frequency deviation of ± 8 kHz.

(d) Each transmitter shall be equipped with a device that will automatically prevent modulation levels in excess of the limits specified in this section.

(e) Other types of emissions may be authorized upon an adequate showing of need. An application requesting such authorization shall fully describe the modulation characteristics (for FM include maximum modulating frequency and maximum frequency deviation), emission and bandwidth desired, shall specify the bandwidth to be occupied, and shall state the reasons why such an emission is required.

(f) The authorization to employ any of the various types of modulated emissions in this service shall be construed to include authority to employ unmodulated emissions only for temporary or short periods necessary for equipment testing incident to the construction or maintenance of the radio station.

§22.907 Emission Requirements.

(a) Except as provided in paragraph (c) of this section, some means must be employed to attenuate those signals under F3 radiotelephony operation that are applied to the modulated stage from the modulation limiter, required under Section 22.906 of this part.

(1) For F3 radiotelephony emissions from mobile stations, these signals shall be attenuated, relative to the attenuation at 1 kHz, in the following manner:

(i) The signals in the frequency range of 3 kHz to 5.9 kHz and from 6.1 kHz to 15 kHz shall be attenuated by at least 40 log $_{10}$ (f/3) decibels where (f) is the frequency of the signal in kHz;

(ii) The signals in the frequency range of 5.9 kHz to 6.1 kHz shall be attenuated at least 35 decibels; and

(iii) The signals in the frequency range above 15 kHz shall be attenuated at least 28 decibels.

(2) For F3 radiotelephony emissions from land stations, these signals shall be attenuated, relative to the attenuation at 1 kHz, in the following manner:

(i) The signals in the frequency range of 3 kHz to 15 kHz shall be attenuated by at least 40 log $_{10}$ (f/3) decibels where (f) is the frequency of the signal in kHz; and

(ii) The signals in the frequency range above 15 kHz shall be attenuated by at least 28 decibels.

(3) No filtering is required of the F9 supervisory audio tones, the F9 signaling tones or the F9Y wideband data signals.

(b) Except as provided in paragraph (c) of this section, the mean power of emissions from transmitters operated in the F3 radiotelephony mode in this service shall be attenuated below the mean power of the unmodulated carrier in accordance with the following schedule:

(1) On any frequency removed from the carrier frequency by greater than 20 kHz up to and including 45 kHz: at least 26 decibels; and

(2) On any frequency removed from the carrier frequency by greater than 45 kHz up to the first multiple of the carrier frequency: At least 60 decibels or 43 + 10 log $_{10}$(mean output power in watts) decibels, whichever is the lesser attenuation.

(c) In lieu of the requirements of paragraphs (a) and (b) of this section, compliance with the following emission specifications may be demonstrated for transmitters operating in the F3 radiotelephony mode. The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) shall be attenuated below the mean power of the unmodulated carrier in accordance with the following schedule:

(1) On any frequency removed from the carrier frequency by greater than 12 kHz up to and including 20 kHz: At least 117 log $_{10}$(f_d/12) decibels;

(2) On any frequency removed from the carrier frequency by greater than 20 kHz up to the first multiple of the carrier frequency: At least 100 log $_{10}$ (f_d/11) decibels or 60 decibels or 43 + log $_{10}$ (mean output power in watts) decibels, whichever is the lesser attenuation; and

(3) Mobile stations operating in the F3 radiotelephony mode must still demonstrate compliance with paragraphs (a)(1)(ii) of this section.

(d) The mean power of emissions from transmitters operated in the F9Y wideband data mode in this service shall be attenuated below the mean power of the unmodulated carrier in accordance with the following schedule:

(1) On the frequency removed from the carrier frequency by more than 20 kHz up to and including 45 kHz: At least 26 decibels;

(2) On any frequency removed from the carrier frequency by more than 45 kHz up to and including 90 kHz: At least 45 decibels; and

(3) On any frequency removed from the carrier frequency by more than 90 kHz up to the first multiple of the carrier frequency: At least 60 decibels or 43 + 10 log $_{10}$ (mean output power in watts) decibels, whichever is the lesser attenuation.

(e) The mean power of emissions from transmitters operated in this service shall be attenuated below the mean power of the unmodulated carrier on any frequency twice or greater than twice the fundamental frequency by at least 43 + 10 log $_{10}$ (mean output power in watts) decibels.

(f) The mean power of any emissions appearing in the base station frequency range from mobile transmitters operated in this service shall be attenuated to a level not to exceed -80 dBm at the transmit antenna connector.

(g) The mean power of emissions from transmitters operated in this service in the F9 signaling tone mode shall be attenuated below the mean power of the unmodulated carrier in accordance with pragraphs (b), (c), (e) and (f) of this section, exclusive of paragraph (c)(3).

(h) The mean power of emissions from transmitters operated in this service in the F9 supervisory audio tone mode shall be attenuated below the mean power of the unmodulated carrier in accordance with paragraphs (d), (e) and (f) of this section.

(i) When any emission from a transmitter operating in this service results in harmful interference to users of another radio service, the Commission may require a greater attenuation of that emission than specified in this section.

(j) Pending the adoption of specific measurement procedures to determine the level of attenuation of spurious emissions, the following spectrum analyzer bandwidth setting should be used:

(1) When operating in the F3 radiotelephony mode or the F9 signaling tone mode:

(i) For any emission less than or equal to 45 kHz removed from the carrier frequency: 300 Hz; and

(ii) For any emission greater than 45 kHz removed from the carrier frequency: 30 kHz

(2) When operating in the F9Y wideband data mode or the F9 supervisory audio tone mode:

(i) For any emission less than or equal to 60 kHz removed from the carrier frequency: 300 Hz; and

(ii) For any emission greater than 60 kHz removed from the carrier frequency: 30 kHz.

§22.908 Transmitter construction and installation.

The equipment at the operating and transmitting positions shall be so installed and protected that it is not accessible to, or capable of being operated by, persons other than those duly authorized by the licensee. In general, each transmitter used in the Domestic Public Cellular Radio Telecommunications Service shall be so constructed or installed that all controls thereon which may cause off-frequency operation or result in any unauthorized emission shall be protected from access by other than duly authorized holders of first or second class radio operator licenses.

§22.909 Control Point.

(a) Each cellular system is required to have:

(1) at least one control point

(2) a person on duty at the control point who is in charge of system operation during the normal rendition of service. The location of the control point may not be moved beyond the boundary of the authorized service area without prior Commission approval.

(b) At each control point, facilities which will permit the operator to turn off base station transmitters shall be installed.

§22.910 Station Identification.

Cellular land, mobile, or auxiliary test stations in this service shall not be required to transmit identifying call signs.

§22.911 Permissible Communications.

(a) Mobile Stations in this service are authorized to communicate with and through base stations only. Such communications between base and mobile stations shall be upon frequencies which are paired in the manner set forth in Section 22.902.

(b) Base stations in this service are authorized to communicate with associated subscribers; base stations must also render service to properly licensed roamers. Service may be rendered to mobile stations on board vessels.

(c) Auxiliary test stations in this service may operate on either base or mobile station frequencies for the purpose of determining the performance of base or mobile station equipment.

(d) General and dispatch communications are permitted on cellular systems. Pending further investigation by the Commission, "fleet-call" dispatching, in which a dispatcher simultaneously communicates with multiple mobile units, will not be permitted except on a developmental basis.

§22.912 Responsibility for operational control and maintenance of mobile stations.

(a) The licensee of a base station in this service shall be responsible for exercising effective operational control over all mobile stations with which it communicates. The proper installation, maintenance and repair of such mobile stations shall normally be the responsibility of the cellular system licensee except that customer provided equipment shall be the responsibility of the customer.

(b) A mobile station normally associated with, and licensed to, a specified cellular system will be deemed, when communicating with a different system pursuant to legally effective tariff provisions, to be temporarily associated with and licensed to such different system and the licensee of such different system shall, for such temporary period, assume the same licensee responsibility for such mobile stations if such stations were regularly licensed to it.

§22.913 Content of applications.

(a) Applications for new stations or for modified facilities increasing the Cellular Geographic Service Area of existing stations shall be filed on FCC Form 401. The following exhibits shall be attached to any such application:

(1) An exhibit indicating whether a grant of the application will be a major action under Section 1.1305 of the Commission's Rules.

(2) An exhibit including a map or maps of the cellular system's existing Cellular Geographic Service Area, if any, and the Cellular Geographic Service Area

proposed in the application. This exhibit shall contain all the information specified in Section 22.903(a).

(3) An exhibit containing the engineering data and calculations used to derive the service contours shown. See Section 22.903(c).

(4) An exhibit stating how the proposal complies with the Commission's cellular design concepts, and indicating the applicant's projected method for coordinated expansion of the system in response to changing service demands.

(5) An exhibit indicating the basis which the applicant will use to determine whether sufficient congestion exists to warrant cell-splitting.

(6) An exhibit indicating the frequency plan to be used if the application is granted.

(7) An exhibit indicating the applicant's service proposals for local subscribers and roamers, including its method of handling complaints. If no change is made in service proposals previously authorized, this exhibit may be omitted.

(8) An exhibit including full particulars regarding the cost of construction of the proposed facilities and demonstrating how the applicant intends to finance construction. See Section 22.917.

(9) An exhibit indicating how the proposal would serve the public interest. If an application for a new or modified CGSA, the applicant shall provide population and demographic information on the proposed CGSA, including public need survey information, as well as other information relevant to whether the public interest, convenience and necessity would be served by a grant.

(b) Applications proposing modifications to existing stations which do not involve new facilities, a change in height or power of existing facilities, or a change in CGSA, may be filed on FCC Form 403.

§22.914 Provision of service to subscribers.

Subscriptions to mobile service shall be afforded to the public within the licensee's Cellular Geographic Service Area in chronological order of filing of request for service, except under emergency conditions. Prospective subscribers shall be informed of the area in which reliable service can be expected. If a licensee turns away a request for service due to lack of capacity it shall report that fact to the Commission and indicate how it plans to remedy its lack of capacity.

§22.915 Cellular System Compatibility Specification

(a) The technical specifications for compatibility of mobile and base stations in the Domestic Public Cellular Radio Telecommunications Service are contained in the "Cellular System Mobile Station-Land Station Compatibility Specification" (April 1981 Ed.), Office of Science and Technology Bulletin No. 53. This bulletin is contained in Appendix D to the Report and Order in CC Docket No. 79-318, and is printed in the Federal Register at 45 FR (1981).

(b) Copies of the current edition of the compatibility specification are available for inspection at the following locations:
Office of the Common Carrier Bureau
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C.
Office of Science and Technology
Federal Communications Commission
2025 M Street, N.W.
Washington, D.C.

(c) Copies of the compatibility specifications may be ordered from the Commission's copying contractor.

§22.916 Evaluation of Cellular Applications.

(a) In order to expedite action on mutually exclusive cellular applications, comparison on all such applications shall be undertaken in accordance with the following procedures:

(1) All mutually exclusive applications that are acceptable for filing and meet our basic qualifying criteria shall be designated for a comparative hearing. Applications involving basic qualifying issues shall additionally be designated for hearing on those issues on an expedited basis as described in subparagraph (b) of this section.

(2) The comparative hearing shall be conducted by an Administrative Law Judge named in the designation order or in a subsequent order.

(3) Within 60 days of the date of designation of an Administrative Law Judge, all parties whose applications have been designated for further consideration shall submit briefs and written evidence in an attempt to present a showing that they are superior to all other competing applicants. Responsive pleadings may be filed within 15 days.

(4) Upon evaluation of the applications, the information submitted, and such other matters as may be officially noticed, the Administrative Law Judge will issue a decision granting the proposal that best serves the public interest, convenience and necessity and denying all other application(s). The decision will state briefly and concisely the reasons for the Judge's selection.

(b) Expedited hearing procedures. In any hearing to which this Section applies, the Administrative Law Judge shall establish a strict timetable for discovery, prehearing procedures, and reception of evidence. All testimony shall be in written form except upon order of the Administrative Law Judge. Such an order will be issued only upon a substantial showing that a party will be prejudiced by the submission of all evidence in a written form. The Administrative Law Judge shall utilize such procedures as shall result in the expeditious resolution of all factual issues and otherwise serve the ends of justice.

§22.917 Demonstration of financial qualifications.

(a) Applications for new stations or modified facilities shall demonstrate the applicant's financial ability to meet the realistic and prudent:

(1) Estimated costs of proposed construction and other initial expenses; and

(2) Estimated operating expenses for a reasonable period of time, depending upon the nature of service proposed and the degree of business uncertainty or risk.

(b) Except as provided in paragraph (c) of this section, each application shall demonstrate an applicant's financial ability under paragraph (a) of this section by submitting the following financial information, the information required by paragraph (d) of this section, and whatever other information or details the Commission may require:

(1) A balance sheet current within ninety (90) days of the date of the application and copies of any financial commitments (such as, for example, loan agreements and service contracts) in support of the proposed facilities; and

(2) Whenever the submissions of paragraph (b)(1) of this section do not satisfy paragraph (a) of this section, the applicant shall submit additional information (e.g. a current income statement, and, for the period of proposed construction

plus an initial year of operation, a statement of projected revenues and expenses, a statement of projected sources and application of funds, etc.) as is necessary to demonstrate financial ability.

(c) Each application for an assignment of a license (or permit), or for the transfer of control of a corporation holding a license (or permit), shall demonstrate the financial ability of the proposed assignee or transferee to acquire and operate the facilities by submitting adequate financial information under the guidelines specified in this section, as appropriate.

(d) The following additional information shall be submitted on any form of intended credit arrangement or equity placement:

(1) The details of any loan or other form of credit arrangement intended to be utilized to finance the proposed construction, acquisition, or operation of the requested facilities including such information as the identity of the creditor (or creditors), letters of commitment, terms of the transaction, and a statement that paragraph (e) of this section is complied with; and

(2) The details of any sale or placement of any equity or other form of ownership interest.

(e) In addition to the disclosures required by paragraph (c) of this section, any loan or other credit arrangement providing for a chattel mortgage or secured interest in any proposed radio station facility must include a provision for a minimum of ten (10) days prior written notification to the licensee or permittee, and to the Commission, before any such equipment may be repossessed under default provision of the agreement.

APPENDIX - D

Office of Science and Technology

Technical Standards Branch

Federal Communications Commission

Cellular System
Mobile Station - Land Station
Compatibility Specification

OST Bulletin No. 53

April 1981

Cellular System Mobile Station - Land Station Compatibility Specification

Any questions concerning the subject matter presented in this Bulletin should be addressed to:

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PREFACE

These technical requirements form a compatibility (see Note 1) standard for cellular mobile telecommunications systems. Their purpose is to ensure that a mobile station can obtain service in any cellular system. These requirements do not address the quality or reliability of that service, nor do they cover equipment performance or measurement procedures.

To ensure compatibility, it is essential that both radio-system parameters and call-processing procedures be specified. The speech-filtering, modulation, and RF-emission parameters commonly encountered in two-way radio systems have been updated and expanded to reflect the unique radio plan upon which cellular systems are based. The sequence of call processing steps that the mobile and land stations execute to establish calls has been specified along with the digital control messages and analog signals that are exchanged between the two stations.

The land station is subject to fewer compatibility requirements than the mobile station. Radiated power levels, both desired and undesired, are fully specified for mobile stations to control the RF interference that one mobile station can cause another. Land stations are fixed in location and their interference is controlled by proper layout and operation of the system in which the station operates. Detailed call-processing procedures are specified for mobile stations to ensure a uniform response to all land stations. Land station call procedures, like power levels, are not specified in detail because they are a part of the overall design of the individual land system. This approach to writing the compatibility specification provides the land system designer with sufficient flexibility to respond to local service needs and to account for local topography and propagation conditions.

The basic radio-system parameters and call-processing procedures embodied in the compatibility specification have been derived from the Chicago and Baltimore-Washington developmental cellular systems. The cellular plan has been successfully demonstrated in a working system and can now be applied in commercial systems. As commercial systems are built and operated, additional capabilities, primarily in the area of call-processing procedures, will evolve. It is important to plan for the evolution that will take place in the early growth years of commercial operation by providing flexible procedures by which these specifications can be administered and updated.

MOBILE STATION - LAND STATION COMPATIBILITY SPECIFICATION

MOBILE STATION - LAND STATION COMPATIBILITY SPECIFICATION

1. DEFINITIONS

Access Channel. A control channel used by a mobile station to access a system to obtain service.

Analog Color Code. An analog signal (see SAT) transmitted by a land station on a voice channel and used to detect capture of a mobile station by an interfering land station and/or the capture of a land station by an interfering mobile station.

BCH Code. Bose-Chaudhuri-Hocquenghem Code.

Busy-Idle Bits. The portion of the data stream transmitted by a land station on a forward control channel that is used to indicate the current busy-idle status of the corresponding reverse control channel.

Control Channel. A channel used for the transmission of digital control information from a land station to a mobile station or from a mobile station to a land station.

Digital Color Code (DCC). A digital signal transmitted by a land station on a forward control channel that is used to detect capture of a land station by an interfering mobile station.

Flash Request. A message sent on a voice channel from a mobile station to a land station indicating that a user desires to invoke special processing.

Forward control channel (FOCC). A control channel used from a land station to a mobile station.

Forward Voice Channel (FVC). A voice channel used from a land station to a mobile station.

Group Identification. A subset of the most significant bits of the system identification (SID) that is used to identify a group of cellular systems.

Handoff. The act of transferring a mobile station from one voice channel to another.

Home Mobile Station. A mobile station which operates in the cellular system from which service is subscribed.

Land Station. A station in the Domestic Public Cellular Radio Telecommunications Service, other than a mobile station, used for radio communications with mobile stations.

Mobile Identification Number (MIN). The 34-bit number which is a digital representation of the 10-digit directory telephone number assigned to a mobile station.

Mobile Station. A station in the Domestic Public Cellular Radio Telecommunications Service intended to be used while in motion or during halts at unspecified points. It is assumed that mobile stations include portable units (e.g., hand-held 'personal' units) as well as units installed in vehicles.

Mobile Station Class. The following mobile station classes are defined for this section:

— class I. High power station.

— class II. Mid-range power station.

— class III. Low power station.

Numeric Information. Numeric information is used to describe the operation of the mobile station. The following subscripts are used to clarify the use of the numeric information:

's' to indicate a value stored in a mobile station's temporary memory.

'sv' to indicate a stored value that varies as a mobile station processes various tasks,

'sl' to indicate the stored limits on values that vary,

'r' to indicate a value received by a mobile station over a forward control channel,

'p' to indicate a value set in a mobile station's permanent security and identification memory, and

's-p' to indicate a value stored in a mobile station's semi-permanent security and identification memory.

The numeric indicators are:

— $ACCOLC_r$. A four-bit number used to identify which overload class field controls access attempts.

— BIS_s. Identifies whether a mobile station must check for an idle-to-busy transition on a reverse control channel when accessing a system.

— $CCLIST_s$. The list of control channels to be scanned by a mobile station processing the Directed-Retry Task (see Section 2.6.3.14).

— $CMAX_s$. The maximum number of channels to be scanned by a mobile station when accessing a system.

— CPA_s. Identifies whether the access functions are combined with the paging functions on the same set of control channels.

— DTX_s. Identifies whether the mobile station is permitted to use the discontinuous transmission mode on the voice channel.

— E_s. The stored value of the E field sent on the forward control channel. E_s identifies whether a home mobile station must send only $MIN1_p$ or both $MIN1_p$ and $MIN2_p$ when accessing the system.

— EX_p. Identifies whether home mobile stations must send $MIN1_p$ or both $MIN1_p$ and $MIN2_p$ when accessing the system. EX_p differs from E_s in that the information is stored in the mobile station's security and identification memory.

— $FIRSTCHA_s$. The number of the first control channel used for accessing a system.

— $FIRSTCHP_s$. The number of the first control channel used for paging mobile stations.

— $LASTCHA_s$. The number of the last control channel used for accessing a system.

— $LASTCHP_s$. The number of the last control channel used for paging mobile stations.

— LT_s. Identifies whether the next access attempt is required to be the last try.

— $MIN1_p$. The 24-bit number which corresponds to the 7-digit directory telephone number assigned to a mobile station.

— $MIN2_p$. The 10-bit number which corresponds to the 3-digit area code assigned to a mobile station.

— $MAXBUSY_s$. The maximum number of busy occurrences allowed on a reverse control channel.

— $MAXSZTR_s$. The maximum number of seizure attempts allowed on a reverse control channel.

— N_s. The number of paging channels that a mobile station must scan.